

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 3 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Withdrawn) A flexible multilayer packaging material for protecting articles that are sensitive to moisture and oxidizing agents, comprising:  
at least one active polymeric barrier layer that binds moisture and oxidizing agents; and  
at least one ceramic barrier layer.
2. (Withdrawn) The packaging material according to claim 1, wherein:  
the active polymeric barrier layer chemically binds the moisture and oxidizing agents.
3. (Withdrawn) The packaging material according to claim 1, wherein:  
the active polymeric barrier layer includes one or more materials from the group consisting of a polymeric matrix with dispersed cyclodextrines, cyclic olefin copolymers and a polymeric matrix with anhydrides.
4. (Withdrawn) The packaging material according to claim 3, wherein:  
the ceramic barrier layer includes a material from the group consisting of metal nitrides, metal oxides, metal oxynitrides and combinations thereof.
5. (Withdrawn) The packaging material according to claim 4, wherein:  
the at least one active polymeric barrier layer and the at least one ceramic barrier layer are transparent.
6. (Withdrawn) The packaging material according to claim 1, wherein:

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 4 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

the ceramic barrier layer includes one or more materials from the group consisting of metal nitrides, metal oxides and metal oxynitrides.

7. (Withdrawn) The packaging material according to claim 6, wherein:  
the metal is aluminum.

8. (Withdrawn) The packaging material of claim 1, wherein:  
the ceramic barrier layer includes one or more materials from the group consisting of silicon nitride, silicon oxide and silicon oxynitride.

9. (Withdrawn) The packaging material according to claim 1, wherein:  
the at least one active polymeric barrier layer and the at least one ceramic barrier layer are transparent.

10-16. (Canceled)

17. (Currently amended) An organic electronic device that has one or more components that are sensitive to moisture or oxidizing agents, comprising:  
a flexible substrate;  
a functional area on the substrate, comprising one or more active organic elements;  
a cap encapsulating the functional area; and  
a first flexible multilayer packaging material having a first active polymeric barrier layer that binds moisture and oxidizing agents and a ceramic barrier layer; wherein  
the first flexible multilayer packaging material protects the functional area; and  
the first active polymeric barrier layer includes ~~one or more materials from the group consisting of a polymeric matrix with dispersed cyclodextrines and a~~ material comprising a polymeric matrix with anhydrides.

18. (Original) The organic electronic device according to claim 17, wherein:

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 5 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

the first flexible multilayer packaging material is arranged between the functional area and the flexible substrate.

19. (Original) The organic electronic device according to claim 17, wherein the cap comprises the first flexible multilayer packaging material.

20. (Original) The organic electronic device according to claim 17, wherein the cap comprises a second flexible multilayer packaging material comprising:

at least one ceramic barrier layer; and

at least one active polymeric barrier layer that binds the moisture and oxidizing agents;

wherein the at least one active polymeric barrier layer of the second flexible multilayer packaging material includes one or more materials from the group consisting of a polymeric matrix with dispersed cyclodextrines, a cyclic olefin copolymer and a polymeric matrix with anhydrides.

21. (Original) The organic electronic device according to claim 17, wherein:  
the cap includes one or more materials from the group consisting of polymers, metals and glass.

22. (Original) The organic electronic device according to claim 17, wherein:  
the flexible substrate comprises a polymer.

23. (Original) The organic electronic device according to claim 22, wherein:  
the cap comprises a second flexible multilayer packaging material comprising:  
at least one active polymeric barrier layer that binds the moisture and oxidizing agents;  
and  
at least one ceramic barrier layer.

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 6 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

24. (Currently Amended) The organic electronic device according to claim 22, wherein:

the cap comprises a second flexible multilayer packaging material comprising:

at least one active polymeric barrier layer in the second flexible multilayer packaging material that binds the moisture and oxidizing agents; and

at least one ceramic barrier layer;

wherein the at least one active polymeric barrier layer includes one or more materials from the group consisting of a polymeric matrix with dispersed cyclodextrines, a cyclic olefin copolymer and a polymeric matrix with anhydrides.

25. (Original) The organic electronic device according to claim 22, wherein:  
the flexible substrate includes a second active polymeric barrier layer.

26. (Original) The organic electronic device according to claim 17, wherein:  
the flexible substrate comprises an assembly of active polymeric barrier layers and ceramic barrier layers.

27. (Original) The organic electronic device according to claim 26, wherein:  
the substrate has a first surface and a second surface, the first surface is closer to the functional area than the second surface and the second surface comprises a ceramic barrier layer.

28. (Previously Presented) The organic electronic device according to claim 17, wherein:

the one or more active organic elements comprise at least one stack having a first electrically conductive layer, an organic functional layer on the first conductive layer and a second electrically conductive layer on the organic functional layer; and

the organic functional layer comprises at least one organic electroluminescent layer.

29. (Previously Presented) The organic electronic device according to claim 17, wherein:

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 7 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

the one or more active organic elements include at least one stack comprising a first electrically conductive layer, an organic functional layer on the first conductive layer and a second electrically conductive layer on the organic functional layer; and

the functional layer comprises at least one organic radiation detecting layer forming an organic radiation sensor.

30. (Previously Presented) The organic electronic device according to claim 17, wherein the anhydrides are acid anhydrides of organic acids.

31. (Currently amended) An organic electronic device having one or more components that are sensitive to moisture or oxidizing agents, comprising:  
a flexible substrate;  
an organic functional area on the substrate, comprising one or more active organic elements;  
a cap encapsulating the organic functional area; and  
a first flexible multilayer packaging material having a first active polymeric barrier layer that binds moisture and oxidizing agents via chemi- or physisorption and a ceramic barrier layer;  
wherein the first flexible multilayer packaging material protects the organic functional area; and  
the substrate comprises ~~comprising~~ an assembly of at least one active polymeric barrier layer and at least one ceramic barrier layer, the substrate having a first surface and a second surface, the first surface being closer to the functional area than the second surface and the second surface comprising a ceramic barrier.

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 8 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

32. (Previously Presented) The organic electronic device according to claim 31, wherein the first active polymeric barrier layer chemically binds moisture and oxidizing agents.

33. (Currently amended) An organic electronic device having one or more components that are sensitive to moisture or oxidizing agents, comprising:  
a flexible substrate;  
an organic functional area on the substrate, comprising one or more active organic elements;  
a cap encapsulating the organic functional area; and  
a first flexible multilayer packaging material ~~barrier layer~~ that binds moisture and oxidizing agents via chemi- or physisorption and a ceramic barrier layer; wherein  
the first flexible multilayer packaging material protects the organic functional area; and  
the substrate comprises an assembly of at least one active polymeric barrier layer, and at least two adjacent first and second ceramic barrier layers that are in direct contact with each other, the first and second ceramic barrier layers exhibiting different microstructures.

34. (Currently amended) The device of claim 33, wherein the first and second ceramic barrier layers comprise  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, respectively.

35. (New) An organic electronic device having one or more components that are sensitive to moisture or oxidizing agents, comprising:  
a flexible substrate;  
an organic functional area on the substrate, comprising one or more active organic elements;  
a cap encapsulating the organic functional area; and  
a first flexible multilayer packaging material that binds moisture and oxidizing agents via chemi- or physisorption and a ceramic barrier layer; wherein  
the first flexible multilayer packaging material protects the organic functional area; and  
the substrate comprises an assembly of at least one active polymeric barrier layer and at

Applicant : Wittmann et al.  
Serial No. : 10/816,718  
Filed : April 2, 2004  
Page : 9 of 19

Attorney's Docket No.: 12406-062001 / P2003,0347 US E

least two adjacent first and second ceramic barrier layers, the first and second ceramic barrier layers having the same composition but exhibiting different microstructures.